

OBSOLETE &amp; DISCARD 4-16-74



# Downflow Gas-Fired Furnaces

## INTRODUCTION

The design of the 58BB,BD Downflow Gas-Fired Furnaces is A.G.A. certified for close clearance, "hide-a-way" installation. These units meet requirements for under-the-house warm air delivery for either concrete slab or crawl space construction. See Fig. 1 and Table 1 for furnace dimensions and physical data. See Table 2 for blower data.

**Table 1 — Dimensions and Physical Data**

FURNACE 58	BB			BD		
MODEL	080	100	120	080	100	125
SERIES	100,200,400,500			200,500		
APPROX SHIP. WT (lb)	136	142	165	154	208	244
DIMENSIONS (in.)						
Width A	16 $\frac{1}{4}$	20 $\frac{1}{4}$		16 $\frac{1}{4}$	20 $\frac{1}{4}$	24 $\frac{1}{4}$
Length B		26				28
Height C	51*		56 $\frac{1}{2}$ *		60*	
With Plenum D		t				
Supply Air Opening E	14 $\frac{1}{8}$	18 $\frac{1}{8}$		14 $\frac{1}{8}$	18 $\frac{1}{8}$	22 $\frac{1}{8}$
Return Air Opening F	14 $\frac{3}{4}$	18 $\frac{3}{4}$		14 $\frac{3}{4}$	18 $\frac{3}{4}$	22 $\frac{3}{4}$
Front to Vent C L H				2	2 $\frac{3}{4}$	
Front to Conn. C L J				2 $\frac{3}{8}$	4 $\frac{3}{8}$	
Vent Diam K	4	5		4	5	6
→ Min Floor Opening L	14 $\frac{3}{4}$	18 $\frac{3}{4}$		14 $\frac{3}{4}$	18 $\frac{3}{4}$	22 $\frac{3}{4}$
RATINGS†	Natural or Propane Gas					
Input (1000 Btuh)	80	100	120	80	100	125
Burn Cap. (1000 Btuh)	64	80	96	64	80	100
Temp Rise (F)**	Series 100,400	70-100		—		
	Series 200,500	45-100		45-100		
ESP (in. wg)	Series 100,400	.12	.15	.20	—	—
	Series 200,500	.50			50	—
FILTERS† No.			2			
Size (in.)		16x16x1		16x18x1	18x18x1	
BURNERS No.	3	4		3	4	5

### ESP — External Static Pressure

\*Add 1-1/4 in. when installed on combustible flooring with non-combustible base

→ †Add 18 1/2 in. when installed with 28AE900051 cooling coil plenum; 22 1/2 in. when installed with 28AE900061 plenum (series 200 and 500 units only)

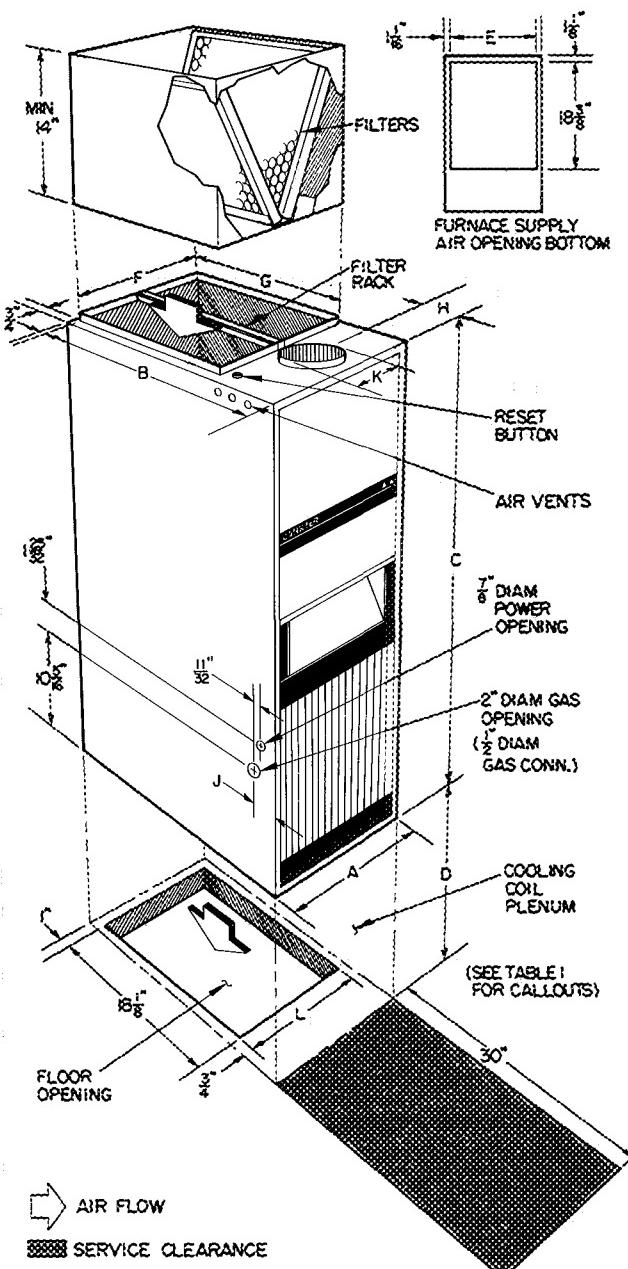
†Ratings shown for elevations up to 2000 ft. For elevations above 2000 ft, deduct 4% of input capacity for each 1000 ft above sea level

\*\*Air temp rise may be calculated using the following formula:

$$\Delta t = \frac{\text{bonnet capacity}}{0.24 \times \text{specific wt of air} \times 60 \times \text{cfm}}$$

$$\Delta t = \frac{\text{bonnet capacity}}{1.08 \times \text{cfm}}$$

††58BB units use throwaway filters; 58BD units use permanent cleanable filters



58BB,BD

→ NOTE: Allow safety clearance of 1 in. from sides, top, and type B vent; 6 in. from unlisted vent; 1 in. at rear.

**Fig. 1 — Dimensions**

Furnaces may be matched with certain 28 Series cooling coils to form combination heating/cooling systems (see Table 3) and employed with humidifiers and electronic air cleaners to form complete controlled-environment systems.

**Table 2 – Blower Data**

BLOWER	BB DIRECT DRIVE						BD BELT DRIVE		
	080		100		120		080,100	125	150
FURNACE 58	100,400	200,500	100,400	200,500	100,400	200,500	200,500		
SERIES									
MOTOR									
Nom Size (in.)	9x8	10x8	9x8	10x8	9x10	10x10	10x8	12x9	12x12
Hp	1/6	1/3	1/6	1/3	1/6	1/3	1/4	1/3	3/4
PPD	—	—	—	—	—	—	5	6	5
BL	—	—	—	—	—	—	36	42	41
BMPS*	—	—	—	—	—	—	4	1	4
ESP (in. wg)†	.20	.30	.20	.50	.20	.50	.20	.50	.20
Air Delivery (max cfm)‡	730	650	1100	1020	890	760	1180	1070	1080
BL — Belt Length									
BMPS — Blower Motor Pulley Setting (turns open from closed position)									
ESP — External Static Pressure									
PPD — Pulley Pitch Diameter (range 2.1 – 2.9 in.)									

\*Do not close blower motor pulley beyond setting shown

†Filter in place

‡With motor set at "High" speed

NOTE: Refer to Application Data literature for fan performance curves.

→ **Table 3 – Furnace-Coil-Plenum Combinations**

FURNACE	COIL	PLENUM
58BB080, 58BB100, 58BB120	28AF002 28AE,AF003 28AE,AF004	28AE900051
58BD080, 58BD100	28AF002 28AE,AF003 28AE,AF004	28AE900051
58BD125	28AE,AF003 28AE,AF004 28AE,AF005	28AE900051
58BD150	28AE,AF005 28AE006	28AE900061

NOTE: Adapters not required.

Series 100 and 200 units are tested and approved for use with natural gas. Series 400 and 500 are factory built and approved for use with 100% propane gas. *Firing of these units with any other gas or mixture is not approved.*

Furnaces are shipped fully assembled, including built-in draft diverters. Heating/cooling models are equipped with a printed circuit control center, which provides a central control connection point for furnace components and field-added accessories. All internal electric and gas controls are factory assembled and wired.

*When unpacking unit, should any in-transit damage be observed, file claim with transportation agency.*

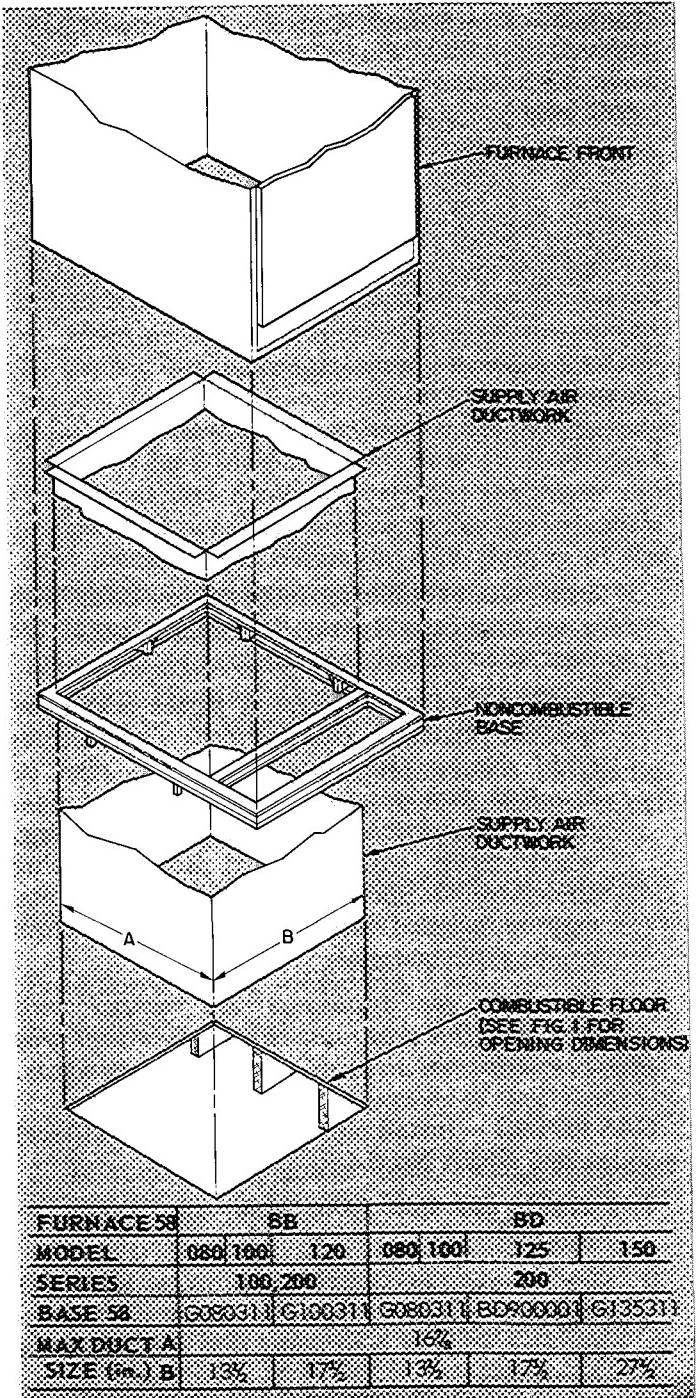
This publication covers furnace and non-combustible base installation. It also shows terminal connections used for wiring accessories to furnace. For accessory installation details, refer to applicable installation literature.

## INSTALLATION

### Location Selection

When selecting a location for the furnace, observe the following:

1. Install furnace close to chimney and as centralized as possible with respect to distribution system.
2. Locate cooling coil (if used) downstream from furnace.
3. Ensure adequate door clearance for service access.
4. Ensure adequate ventilation. (See Combustion Air.)
5. Follow local and national utility codes.
  - a. Allow safety clearance of 1 in. from sides, top and type B vent; 6 in. from unlisted vent; 0 in. at rear.
  - b. Provide service clearance of 30 in. at front of unit.
  - c. Downflow furnaces are not approved for installation directly on combustible floors. Unless furnace is set on a concrete slab floor, use of a noncombustible base is required. (See Fig. 2.) *Noncombustible base is available as an accessory package.* If furnace is combined with a cooling coil, plenum can serve as the noncombustible base.
  - d. If furnace is to be installed on the first floor of a house built over a crawl space, make sure that unit and noncombustible base (if required) will rest on supported floor joists. Otherwise, vibrations could be set up, resulting in unnecessary and undesirable noises.
  - e. Make sure that a positive air seal is made on all four sides of the furnace.

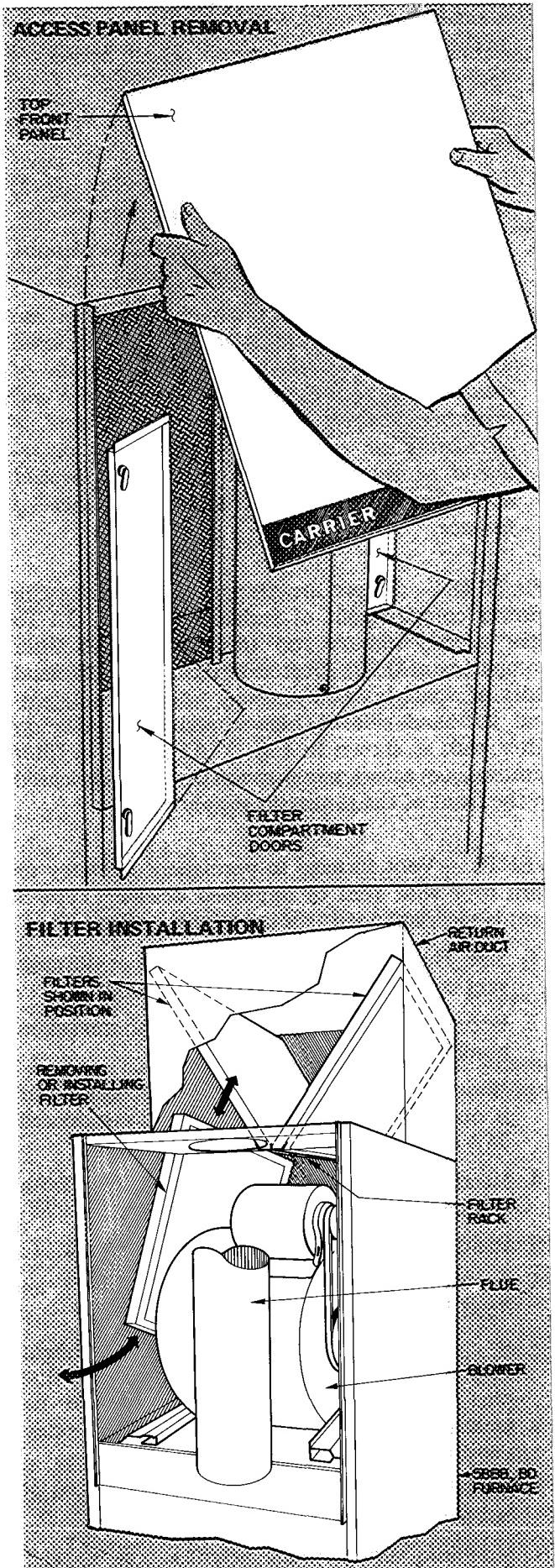


**Fig. 2 — Installation of Noncombustible Base On Combustible Flooring**

- f. If cooling coil is to be used with furnace, provision should be made downstream of the coil to collect and drain any condensate that may blow off the coil.
  
- g. Consult NFPA No. 54; *Installation of Gas Appliances Gas Piping 1969*.

#### Installation Procedures

Install ductwork, filters, and vents; complete external piping and wiring; and provide for combustion and recirculating air.



**Fig. 3 — Installation of Filters in Return Air Duct**

## DUCTWORK RECOMMENDATIONS

1. Install locking-type dampers in all branch or individual ducts to balance out system.
2. Use tapered fittings or starter collars between ducts and plenum.
3. Use flexible duct connection (asbestos cloth) between furnace and discharge plenum.
4. Install acoustical insulation in warm air plenum; install sound traps in short run ducts.
5. Run return air connections under floor or run full size return from space outside enclosed area. *If outdoor air is used, combination of outdoor and return air requires duct design and diverting dampers so installed that volume of circulating air entering furnace cannot be reduced or restricted below that which would normally enter thru circulating air intake of furnace*

**FILTERS** — Filters are shipped from factory in blower compartment of furnace. (See Fig. 3.) To gain access, remove top front panel and filter compartment doors located at right- and left-hand sides of vent. Install by raising filters above right- and left-hand side of blower and positioning on filter rack as shown in Fig. 3. As an aid in filter removal, an access panel could be field fabricated in the front of the return air supply plenum.

**VENTS** — Vent furnace to permanent chimney or thru roof with vent of approved design. (Type B vent is recommended.) Observe local ordinances.

1. Size flue pipe connections same as furnace vent connection. (See Fig. 1 and Table 1.)
2. Run pipe as directly as possible with minimum number of turns.
3. Maintain minimum pitch of 1/4 in. per linear ft on horizontal runs. Pitch should not exceed 75% of vertical vent.
4. Maintain minimum angle of 60 degrees from vertical for vent pipe crossovers in attic.
5. Rigidly support pipe with hangers or straps.
6. Do not connect into a chimney serving an open fireplace.
7. If chimney is used, total equivalent straight length of flue piping between furnace and flue pipe connection at chimney must not be greater than 75% of vertical height of chimney above flue pipe connection.
8. Install flue pipe to extend thru chimney wall but not beyond inside wall of flue.
9. Minimum vertical stack height is 5 ft. Extend flue pipe at least 3 ft above roof and 2 ft above any object within a 15-ft radius. Ensure that

**Table 4 — Pipe Sizing\*, Capacity For Natural Gas, Cu Ft/Hr**

PIPE SIZE (in.)	PIPE LENGTH (ft) <sup>†</sup>							
	10	20	30	40	50	60	70	80
1/2	132	92	73	63	56	50	46	43
5/8	278	190	152	130	115	105	96	90
1	520	350	285	245	215	195	180	170
1 1/4	1050	730	590	500	440	400	370	350

\*Based on pressure drop of 0.3 in. wg, 0.6 sp gr gas

<sup>†</sup>Without elbows

→ NOTE: For pipe sizing capacity for LP gases, refer to NFPA No. 54

vent outlet terminates in an approved cap with a venting capacity not less than that of the vent. (See Table 1 for vent sizes.)

10. Insulate flue pipe where it passes near combustible material. *Underwriter's Laboratories (UL) require that uninsulated flue pipe be installed with a minimum clearance of 6 in. from combustible materials.* Vent piping, which meets with National Board of Fire Underwriter's Specifications for type B vents, may be installed with a clearance of 1 in. from combustible materials.

*If other gas appliances are vented into common flue, flue area must equal largest vent area plus one-half total areas of other vent connectors.*

**GAS PIPING** — Install piping per national and local codes, and NFPA No. 54.

1. Furnish gas line from main gas supply to furnace.
2. Size supply pipe per volume of gas used and allowable pressure drop. (See Table 4.) *Supply pipe size must at least equal that of furnace gas connection.*
- 3. Refer to NFPA No. 54 for additional suggested methods of piping.
  - a. Install drop pipe adjacent to, but not in front of furnace.
  - b. Install manual shutoff valve on gas piping per local codes.
  - c. Install tee in pipe at same elevation as gas inlet connection to unit; provide ground joint union between tee and furnace controls.
  - d. Extend drip leg and cap it.
  - e. Test for pressure and leaks.

**CAUTION:** Never use open flame for testing.

**WIRING** — Fig. 4 shows the printed circuit control center, which is factory-installed on heating/cooling furnaces. Fig. 5 illustrates the field power and control wiring for heating only furnaces; Fig. 6 illustrates the field power and control wiring for the heating/cooling models.

When wiring units, make sure that all national and local codes are followed. Check against loose wiring connections.

When making aluminum conductor connections to copper conductors or terminals, use only connectors which are UL approved for the application. (UL approved connectors will be tin plated, have separator bars for placement between conductors to prevent direct contact between aluminum and copper, and have large bearing surfaces to minimize unit pressures for minimum cold flowing of the aluminum and subsequent loosening of the joint.)

After insulation has been stripped from aluminum conductor, coat conductor end with corrosion inhibitor (Burndy "Penetrox A" or equivalent), and wire brush aluminum surface thru inhibitor.

After cleaning, recoat aluminum conductor with inhibitor, and make up connection. (Coat entire connection.)

*If applicable, wrap connection for moisture and/or electrical protection.*

#### Field Power Wiring — (See Fig. 5 and Fig. 6.)

##### Heating Only Models

1. Connect separate 115-volt, single-phase, 60-Hz power supply thru hole in side of unit casing to 115-volt pigtailed.
2. If required by local codes, install fuse and manual switch between main box and furnace.

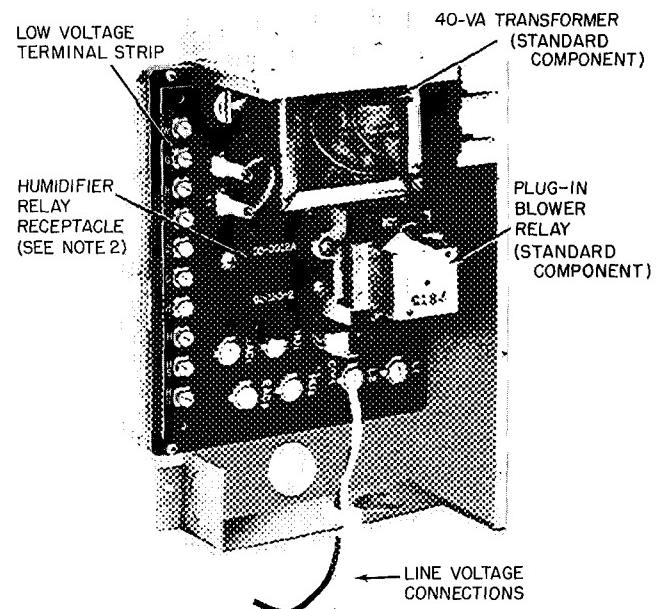
##### Heating/Cooling Models

##### (With Printed Circuit Control Center)

1. Connect separate 115-volt, single-phase, 60-Hz power supply to terminals L<sub>1</sub> and L<sub>2</sub> on the printed circuit control center. (See Fig. 4.)
2. If required by local codes, install fuse and manual switch between main box and furnace.
3. When adding an electronic air cleaner to the system, connect air cleaner to terminals EAC<sub>1</sub> and EAC<sub>2</sub>. These terminals supply 115-volt power to the electronic unit.
4. When adding a line-voltage humidifier to the system, connect humidifier to terminals HU<sub>1</sub> and HU<sub>2</sub>.

*Humidifier has its own control wiring, which is independent of the furnace, except for the power connections provided at HU<sub>1</sub> and HU<sub>2</sub>.*

5. When replacing a single-speed motor with a dual-speed motor, be sure to remove jumper between HI and LO on the control center.



##### NOTES:

- 1 All factory-wired connections are  $\frac{1}{4}$ -in quick-connect terminals; all field-connection points are screw terminals.
- 2 Optional component, humidifier relay, is plugged into receptacle HR when low voltage humidifier is added to system.

**Fig. 4 — Printed Circuit Control Center,  
Cover Removed**

#### Field Control Wiring — (See Fig. 5 and Fig. 6.)

##### Heating Only Models

1. Connect two 24-volt leads from accessory thermostat to low-voltage pigtail R and W.
2. For constant fan operation, turn summer switch, located on the furnace junction box, to the "On" position.

##### Heating/Cooling Models

##### (With Printed Circuit Control Center)

1. For heating with constant fan control, connect leads from room thermostat subbase to terminals W, G, and R on the low voltage terminal strip. (See Fig. 4.) This hook-up is used when heating only with manual fan control at the thermostat is desired.
2. Connect accessory thermostat to furnace and cooling unit. Connect terminals W, G, R and Y on the thermostat subbase to identically labeled terminals on the low voltage terminal strip. Connect yellow and black low voltage leads from the remote condensing unit to the two C terminals on the low voltage terminal strip.

3. When adding a low voltage humidifier to the system, install a plug-in humidifier relay in receptacle HR on the control center. Connect humidifier directly to terminals H and H on the low voltage terminal strip. Connect leads from low voltage humidistat, in the conditioned space, to terminals HS and HS on the low voltage terminal strip.

**IMPORTANT:** Set adjustable heat anticipator (if provided) to agree with ampere value of combination gas valve. Failure to make adjustment will result in unsatisfactory temperature control.

VALVE	HEAT ANTICIPATOR SETTING
Essex (Alpha-Tafco) TF 555	0.45a
Unital 7000	0.20a

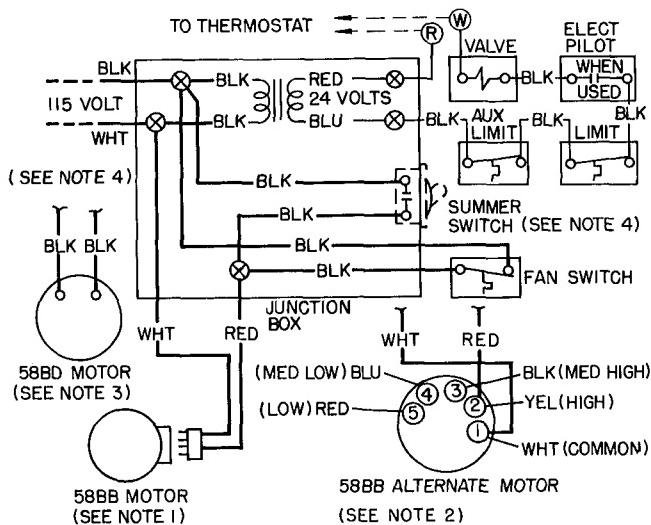
#### → COMBUSTION AIR – See NFPA No. 54.

1. If furnace is installed in a *confined* area, such as a closet or utility room, provide air for combustion.
  - a. Provide two air openings to interior space of equal area, one located near the *top* of the enclosure and one at the *bottom*.
  - b. Make sure that openings have free area not less than 100 sq in. in area, plus an additional 1 sq in. for each 1000 Btuh in excess of 100,000 Btuh input.
  - c. Where openings to interior spaces are impractical, follow the methods outlined in NFPA No. 54.
2. If furnace is installed in an *unconfined* area, such as in a *full* basement, it can normally be assumed that infiltration will provide sufficient air in building of conventional frame, brick or stone construction. In buildings of unusually tight construction, provide a permanent opening to the outdoors with a minimum free area of not less than 1 sq in. per 4000 Btuh total input ratings of all appliances in space.
3. Consult local codes for special requirements.

**CAUTION:** Whenever gas appliance is installed in any area where corrosive atmosphere or chlorine or chlorinated compounds are present, bring combustion air into combustion area of furnace from outdoor source. Failure to do this can cause excessive corrosion in furnace heat exchanger.

**CIRCULATING AIR SUPPLY** – Consult local ordinances and NFPA No. 54.

1. Do not take circulating air from same space as combustion air. Supply may be any mixture of outdoor and return air with minimum temperature of 50 F.



LEGEND (Common for Fig. 5 and Fig. 6)

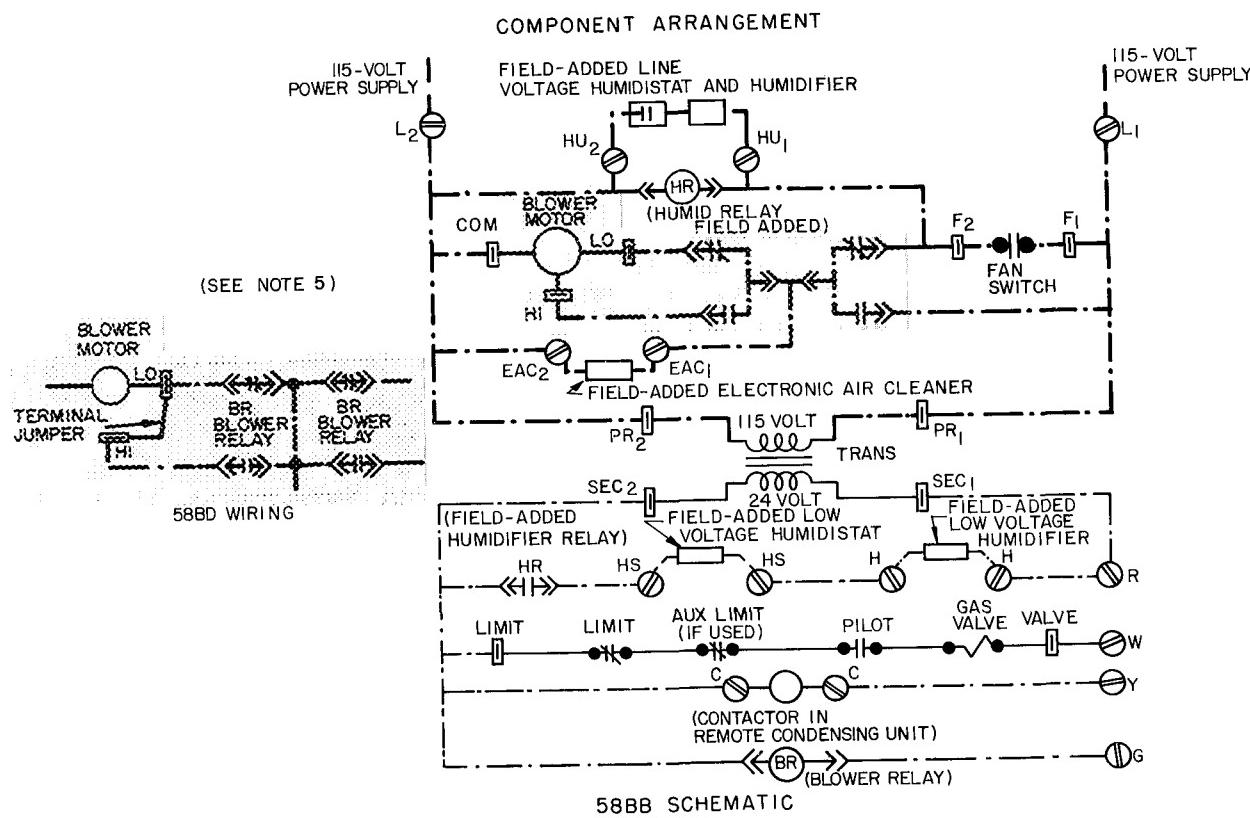
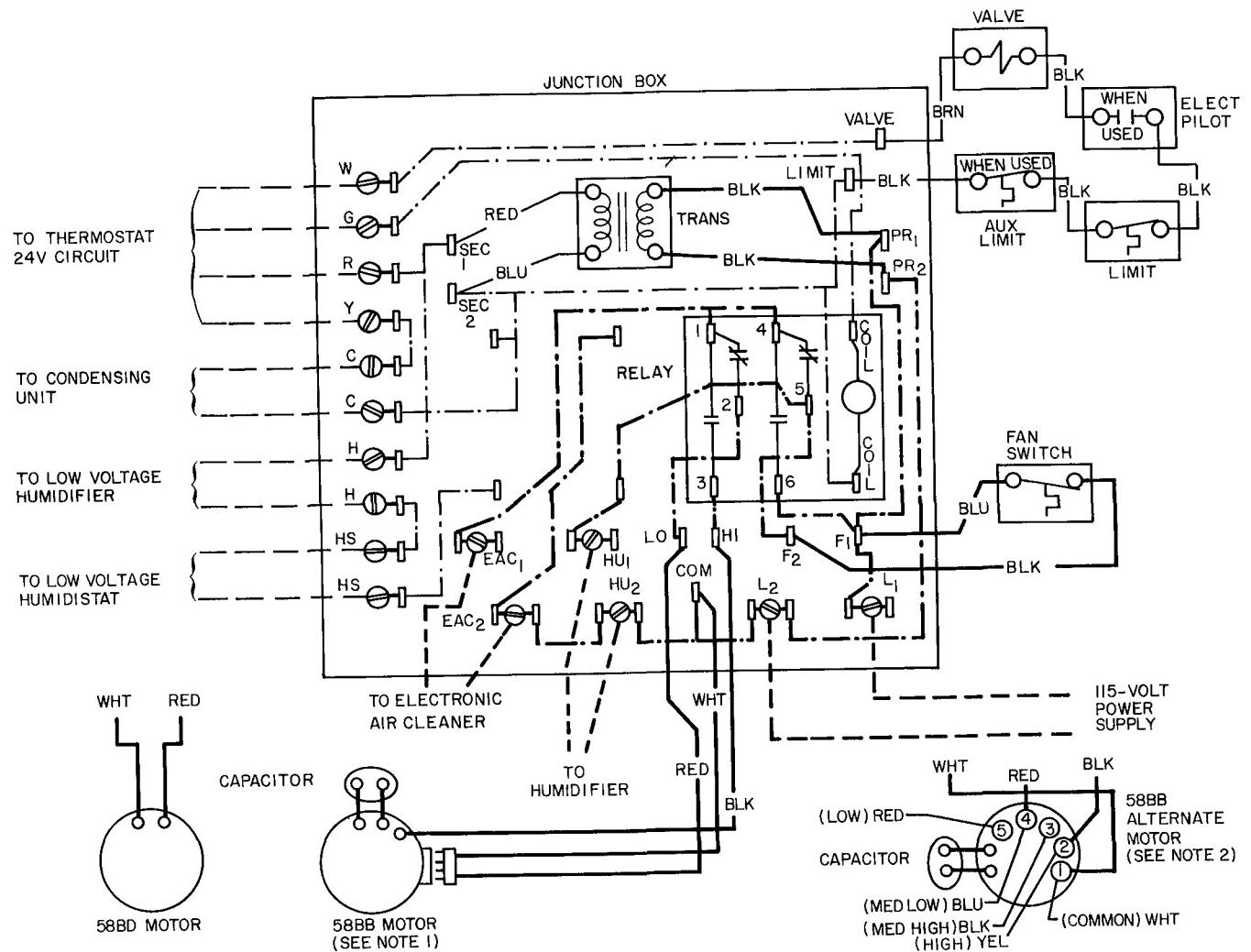
- Field Power Wiring (115 Volt)
- Factory Power Wiring (115 Volt)
- Printed Circuit Control Center Wiring (115 Volt)
- Field Control Wiring (24 Volt)
- Factory Control Wiring (24 Volt)
- Printed Circuit Control Center Wiring (24 Volt)
- Screw Terminal — Field-Connection Points (115 Volt and 24 Volt)
- [ ] 1/4-in Quick-Connect Terminal — Factory-Wired Connections (115 Volt and 24 Volt)

#### NOTES:

- 1 To change *low* speed, pull out speed selector plug and plug in with desired speed marking facing away from motor shaft.
- 2 To change motor speed, move *red* lead to desired terminal on motor
- 3 Wire *black* 58BD motor leads as indicated for white and red 58BB motor leads
- 4 Knockout provided for field installation
- 5 Total electrical load is less than 12 amps
- 6 Whenever replacing original wire supplied with furnace, use AWM (90 C with 3/64-in thick insulation for 24-volt and 4/64-in thick insulation for 115-volt) wire or its equivalent
- 7 Motor(s) furnished with thermal overload protection

#### → Fig. 5 – 58BB,BD Field Power and Control Wiring, Heating Only Diagram

2. Install ducts and diverting dampers so that volume of circulating air entering furnace is unrestricted.
3. Bring return air connection thru top of furnace. Where there is no complete return duct system, run return air duct full size to location outside enclosed area. Return air plenum must extend a sufficient height above 14 in. required for filter removal to provide for attachment of return air duct or grille.



Refer to Fig 5 for legend and notes

Fig. 6 – 58BB,BD Field Power and Control Wiring, Heating/Cooling With Accessories Diagrams

## START-UP AND SERVICE

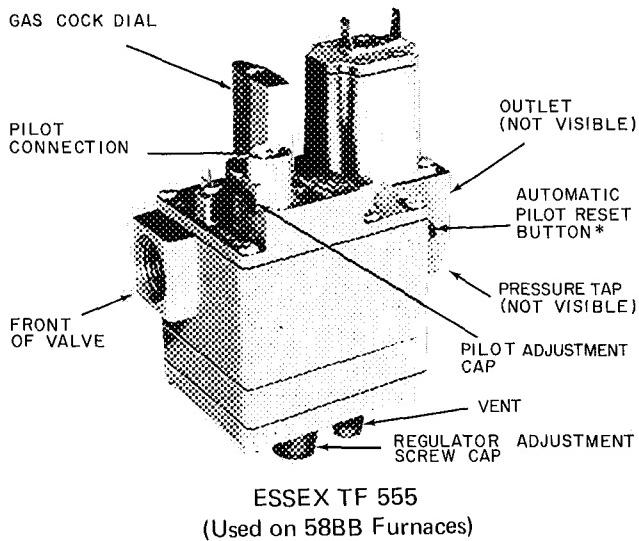
**IMPORTANT:** Remove shipping pad from motor mounting angle before operating blower.

### Initial Start-Up

When first lighting furnace pilot:

1. Open all warm air registers.
2. Set room thermostat to *lowest* setting.
3. If humidifier is installed with system, open water supply valve.
4. If line voltage switch is provided in furnace circuit, turn it to "Off" position.
5. Turn gas cock dial (see Fig. 7 and Fig. 8) to "Off" position.
6. Wait approximately 5 minutes to allow gas which may have accumulated in burner compartment to escape.
7. Turn gas cock dial to "Pilot" position.
8. On Unitrol 7000 valves, depress and hold gas cock dial while lighting pilot burner. If valve is equipped for 100% shutoff, allow pilot to burn approximately one-half minute before releasing dial (Unitrol 7000 valve) or before depressing automatic pilot reset button (Essex TF 555 valve). If pilot does not remain lighted, repeat operation allowing longer period before releasing dial or depressing button. If necessary, adjust pilot. (See Pilot Burner Adjustment.)
9. Turn gas cock dial to "On" position.
10. Set room thermostat at desired temperature position.

**IMPORTANT:** For the Unitrol 7000 models equipped with a pressure regulator, do not adjust gas input between "Pilot" and "On" positions on the gas cock dial.



\*Available only on valves equipped for 100% shutoff.

### Pilot Burner Adjustment

1. Remove pilot adjustment cap. (See Fig. 7.)
2. Adjust pilot key to provide properly sized flame. (Ignition flame should extend outward and upward approximately 1.5 in. from the stem of the pilot.) Turn screw *clockwise* for *high* flame or *counterclockwise* for *low* flame.
3. Replace pilot adjustment cap.

### Combustion Air Adjustment

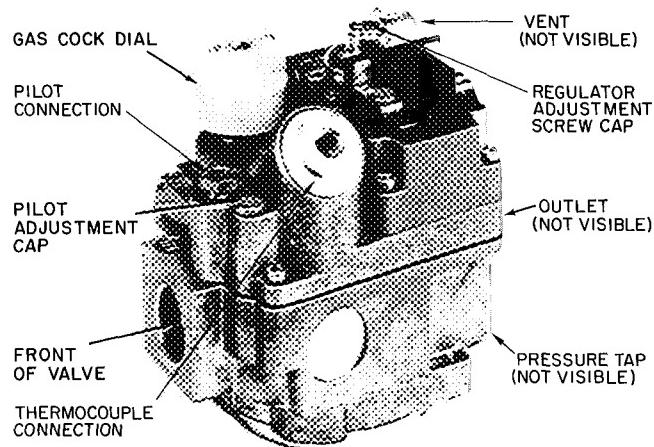
Primary air shutters are provided on all furnaces to enable adjustment of the primary air supply to get proper flame characteristics. Adjust the air shutters as follows:

1. After furnace has been operating for 15 minutes, loosen air shutter screw on each burner face.
2. Close air shutter until yellow tips appear in flame. Then, open air shutter until yellow tips disappear and flame has soft *blue* cone.
3. Secure air shutters in position by tightening each air shutter screw.

### Blower Speed Adjustment

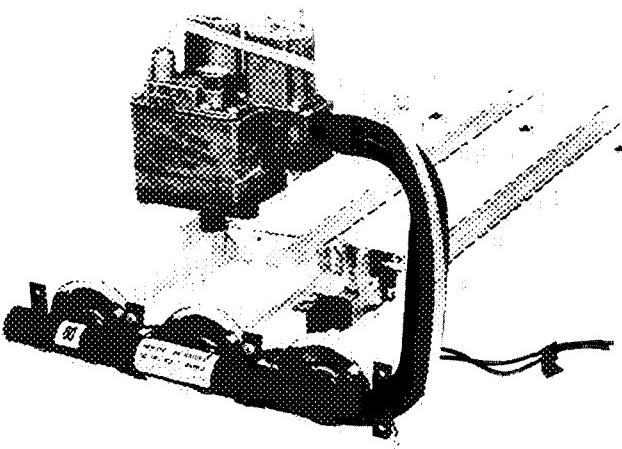
Adjust on installation for nameplate temperature rise. (See Table 1.)

1. For *direct drive* speed change (58BB furnaces), perform the following:
  - a. Rotate speed-change plug or move line lead from fan switch to desired speed terminal. When plug is rotated, desired speed marking should face away from motor shaft.  
*Speeds on plug are marked. High (●), Medium-High (●●), Medium-Low (●●●), and Low (●●●●)*
  - b. For speed selection on direct drive model with terminal connections, change terminal at motor. (See Fig. 5 and Fig. 6.)

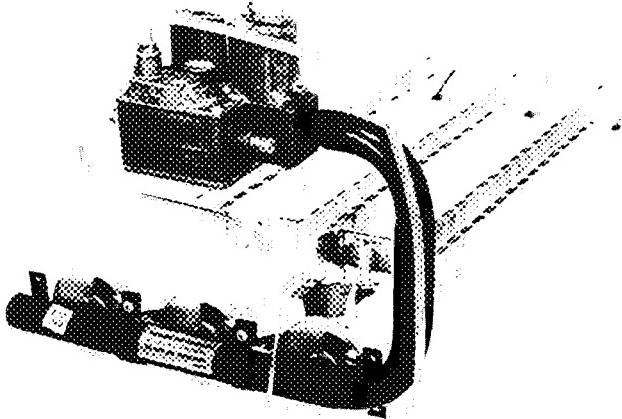


UNITROL 7000  
(Used on 58BD Furnaces)

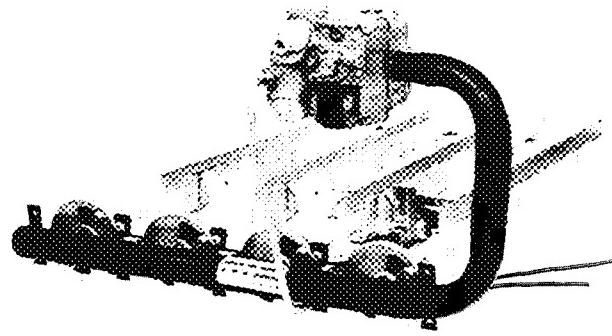
Fig. 7 – Combination Gas Valves



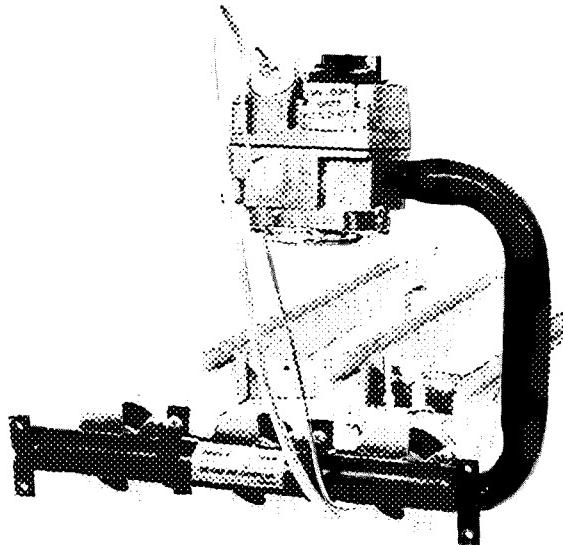
58BB NATURAL GAS BURNERS  
WITH ESSEX TF 555 GAS VALVE



58BB PROPANE GAS BURNERS  
WITH ESSEX TF 555 GAS VALVE



58BD NATURAL GAS BURNERS  
WITH UNITROL 7000 GAS VALVE



58BD PROPANE GAS BURNERS  
WITH UNITROL 7000 GAS VALVE

Fig. 8 – 58BB,BD Gas Burners and Manifold Assemblies

2. For *belt drive* speed change (58BD furnaces), perform the following:
  - a. Loosen setscrew on adjustable hub of motor sheave.
  - b. Rotate hub *clockwise* to *increase* or *counterclockwise* to *decrease* speed and tighten setscrew on flat hub section.

#### Belt Adjustment

Adjustment is correct if one-finger pressure depresses center of belt 1 inch. Each blower speed change on a 58BD furnace requires a belt adjustment.

1. Loosen locknut.
2. Turn adjusting screw on motor mounting bracket *in* to *tighten* or *out* to *loosen*.
3. Tighten locknut.

#### Fan and Limit Control

1. Constant air circulation provides even temperature control. The *lower* the fan switch setting, the *longer* the fan will continue to run after burners turn off.
2. After running furnace for 15 minutes, restrict the return air supply by blocking the filters or by closing the return registers.
3. Allow furnace to shut down on high limit. Fan must continue to run.
4. Remove restriction. Burners should come on a few minutes.
5. Adjust "Off" setting per installation needs. "On" setting is 25 F above "Off" setting; differential is not adjustable.

### **Input Adjustment**

1. Turn off all other gas appliances on same meter.
2. Set thermostat high enough to ignite burners.
3. Check cu ft of gas burned per minute. Multiply value by 60 minutes to determine input (in thousands of Btuh). Rating should be within 5% of nameplate input rating.
4. To adjust input, remove combination gas valve cap covering regulator adjusting screw. (See Fig. 7.)

5. With a small screwdriver, rotate adjustment screw *clockwise* to *increase* or *counterclockwise* to *decrease* pressure. Do not change pressure more than  $\pm 0.3$  in. wg.
6. Replace regulator adjustment screw cap.

**IMPORTANT:** Refer to operating and maintenance instruction literature to ensure better, longer, and more reliable service from your new Carrier furnace.

## **TROUBLESHOOTING**

### **Burner Will Not Operate**

**POWER FAILURE** — Power switch off — *set to on*, blown fuse — *replace*, defective wiring — *replace*

**NO POWER TO CONTROLS** — Thermostat set too low, dirty or defective — *reset, clean or replace as applicable*; defective transformer — *replace*; faulty limit switch — *replace*; blown fusestat — *replace*

**BURNER WILL NOT IGNITE** — Low gas pressure or no gas to unit — *check if manual shutoff valve is closed, check gas supply, check for clogged gas line and clean or repair, adjust gas pressure with all appliances operating*; faulty thermocouple — *check with millivoltmeter and replace if necessary*; pilot light extinguished — *locate cause and relight, dirty pilot — clean*

### **Burner Operates, But Heating Inadequate**

**UNIT UNDERSIZED** — Size selected incorrectly — *never overfire, replace with properly sized unit*

**FUEL INPUT TOO LOW** — Wrong orifice size — *replace orifice*; regulator set too low — *readjust*.

**THERMOSTAT OPENS TOO SOON** — Wrong anticipator setting — *readjust*; thermostat out of calibration — *recalibrate*; thermostat set wrong — *check and reset as necessary*; wrong thermostat location — *relocate*.

**LIMIT SWITCH CYCLES BURNER** — Dirty filters — *clean or replace*, faulty fan switch or motor — *repair or replace*; blower speed too low — *readjust*; fan switch set too high — *readjust*; duct system restricted — *remove restriction*.

### **Poor Combustion and Flame Characteristics**

**SMOKY FLAME** — Insufficient air — *adjust air inlet*; flue restriction — *remove restriction*; down-draft — *eliminate downdraft using flue caps on vents*

**NOISY BURNER** — Too much air — *adjust air inlet*, incorrect input — *make correction as required*

For replacement items use Carrier Specified Parts.

Manufacturer reserves the right to change any product specifications without notice.

**CARRIER AIR CONDITIONING COMPANY • SYRACUSE, NEW YORK**